CLAIM AMENDMENTS

1. (Original) A tunable chromatic optical signal dispersion compensator comprising

three cascaded Mach-Zehnder interferometers, MZIs,

a first MZI including a fixed 50/50 coupler for receiving an input optical signal,

a second MZI including a first adjustable coupler that is shared with the first MZI and a second adjustable coupler that is shared a third MZI, the second MZI further including a half-wave plate positioned across the midpoints of the two path lengths of the second MZI so as to exchange the TE and TM polarizations of the optical signals passing through the two path lengths,

the third MZI including a fixed 50/50 coupler for outputting a dispersion-adjusted output optical signal and

wherein said first and second shared adjustable couplers are adjusted with equal coupling ratios using a single control signal to provide adjustable dispersion compensation to the output signal.

2. (Presently Amended) A tunable chromatic optical signal dispersion compensator comprising

three cascaded Mach-Zehnder interferometers, MZIs,

a first MZI including a fixed 50/50 coupler for receiving an input optical signal,

a second MZI including a first adjustable coupler that is shared with the first MZI and a second adjustable coupler that is shared a third MZI, the second MZI further including a half-wave plate positioned across the midpoints of the two path lengths of the second MZI so as to exchange the TE and TM polarizations of the optical signals passing through the two path lengths,

the third MZI including a fixed 50/50 coupler for outputting a dispersion-adjusted output optical signal,

wherein said first and second shared adjustable couplers are adjusted with equal coupling ratios using a single control signal to provide adjustable dispersion compensation to the output signal, and ~~The optical signal dispersion compensator of claim 1~~ wherein the first and third MZIs have a path-length difference ΔL and the second MZI has a path-length difference $2\Delta L$.

3. (Original) The optical signal dispersion compensator of claim 1 wherein when the two adjustable couplers are set to a 100/0 coupling ratio, the optical signal dispersion compensator has zero dispersion and wherein the dispersion can be tuned positive or negative by adjusting the two adjustable couplers towards a 50/50 coupling ratio.

4. (Original) The optical signal dispersion compensator of claim 1 wherein each of the two adjustable couplers is implemented using an MZI with phase shifters.

5. (Original) The optical signal dispersion compensator of claim 4 wherein the MZI in the adjustable couplers has a zero-electrical-power path-length difference of a half wavelength so that when no electrical power is applied the compensator exhibits zero dispersion.

6. (Original) The optical signal dispersion compensator of claim 4 wherein the phase shifters of each of the two adjustable couplers uses thermooptic heaters operated in a push-pull manner by the single control signal.

7. (Original) The optical signal dispersion compensator of claim 1 implemented as a planar optical integrated circuit.

8. (Original) The optical signal dispersion compensator of claim 1 wherein the fixed 50/50 couplers are y-branch couplers.

9. (Original) The optical signal dispersion compensator of claim 1 being integrated as part of an optical apparatus consisting of one or more of the following optical components

an optical transmitter,
an optical amplifier,
an optical filter,
a wavelength multiplexer,
a wavelength demultiplexer,
and an optical receiver.

10. (Original) The optical signal dispersion compensator of claim 1 being used in a multi- wavelength channel system, the optical signal dispersion compensator having a free-spectral range equal to the system channel spacing divided by an integer.

11. Cancelled

12. Cancelled

13. (Original) A polarization independent tunable chromatic optical signal dispersion compensator, TDC, apparatus comprising

a cascaded arrangement of a first TDC and a second TDC, each TDC comprising

a first MZI including a fixed 50/50 coupler for receiving an input optical signal,

a second MZI including a first adjustable coupler that is shared with the first MZI and a second adjustable coupler that is shared a third MZI, and the third MZI including a fixed 50/50 coupler for outputting a dispersion-adjusted output optical signal and

wherein said first and second shared adjustable couplers in the first and TDC and the second TDC are all adjusted with equal coupling ratios using a single control signal to provide adjustable dispersion compensation to the output signal.

14. (Original) The cascaded TDC of claim 13, wherein a half wave plate is positioned between the two TDCs in order to achieve low polarization dependence.

15. (Presently Amended) A reflective TDC comprising of

a first MZI including a fixed 50/50 coupler for receiving an input optical signal,

a second MZI including a first adjustable coupler that is shared with the first MZI and a second adjustable coupler that is shared with a third MZI, and ~~a~~ said third MZI including a fixed 50/50 coupler for outputting a dispersion-adjusted output optical signal~~, connected~~ to a reflector such that the signal passes twice through the first, second and third MZIs ~~MZI arrangement~~.

16. (Original) The reflective TDC of claim 15 wherein a quarter wave plate is positioned between the TDC and the reflector in order to achieve low polarization dependence.